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300 Years of Medicine in Pennsylvania

Irwin Richman, Ph.D.

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Sandpainting ceremonials of the Indians embodied religion, magic, singing, physio- and psychotherapy, and drug lore.

300 Years of Medicine in Pennsylvania

IRWIN RICHMAN, Ph.D.
Harrisburg, Pennsylvania

Ileitis became a household word and a physician was accorded movie star celebrity in June, 1956. The occasion was President Eisenhower's well publicized ailment. The doctor, Isador S. Ravdin, M.D.—a Pennsylvania surgeon—was called to the White House. A special civilian consultant, he participated in the emergency operation which followed. Ravdin was only one in a long line of Pennsylvania-related physicians

who cared for our chief executives.

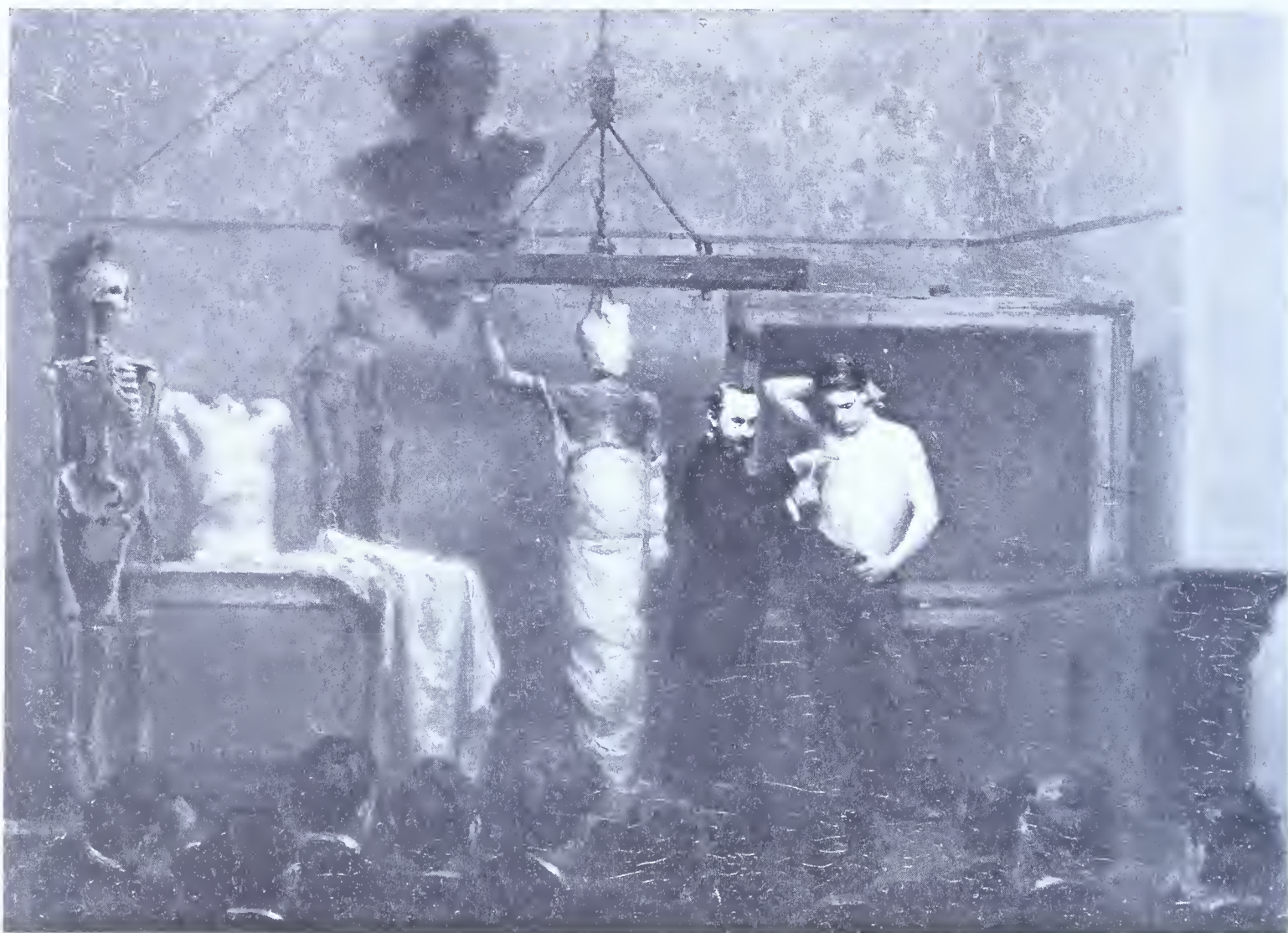
George Washington's two most favored medical men, Elisha Cullen Dick and James Craik, were Pennsylvania trained. W. W. Keen, who helped perform the secret cancer operation on Grover Cleveland in 1893, was a Pennsylvanian as were Nathaniel Chapman and David Hayes Agnew, who were called as consultants in the last agonies of William Henry Harrison and James A. Garfield.

Presidents are extraordinary beings, and an inordinate number of the men responsible for their health have been associated with Pennsylvania—the Commonwealth of so many medical firsts and the home of a fantastic array of medical greats.

The Indians were Pennsylvania's first medical practioners. Their craft combined herbalism with magic and

naturalism with religion. The white man, coming to America at the dawn of modern medicine in western Europe, was an eager eclectic who searched our fields and forests for new drugs—a pastime which led an over-enthusiastic colonial to proclaim the Pennsylvania Indians to be "as able physicians as any in Europe." Accordingly, a concerted effort was made to discover his secrets, an undertaking which added a few new botanicals to the materia medica, and an almost endless assortment of "Indian cures" to be peddled to the credulous.

The first permanent settlers in Pennsylvania came from Sweden, a country which paid little attention to medical training. It is doubtful, therefore, that any of that nation's trained physicians came here. Our references



Dr. Keen's Anatomical Lecture by Charles H. Stephens.

to early medical personnel records are scattered. Frederick Hans Kock had a medicine case fitted out in 1648 and later that year he landed at Fort Christiana (near Wilmington, Delaware). Did he have any training? Was he ever in Pennsylvania? There are no answers.

The Dutch are equally elusive. Jan Petersen's only epithet is that he was a salaried surgeon for the Dutch West India Company on the South (Delaware) River. A score of years later, the names Wilhelm van Rasenberg and Jan Oosting crop up but again nothing is known of their credentials.

Only with the arrival of the English does the medical profession move into historical perspective.

Thomas Wynne came on the *Welcome* with William Penn. He built a house that still stands, albeit much altered, in the Wynnfield section of Philadelphia. Edward Jones, Thomas Lloyd, and "tender Griffith Jones," all

Welsh Quakers like Wynn, were men who played important roles in the early history of the Commonwealth. All are well known, but more for their political records than for any medical contributions.

The truly significant beginning of medical professionalism can be dated from the 1711 arrival in Philadelphia of Dr. John Kearsley, Sr., who came equipped with "a good medical education in England." By apprenticeship he trained John Redman, Thomas and Phineas Bond and Lloyd Zachary. Redman in turn continued the apostolic succession and was the preceptor to John Morgan, Benjamin Rush and Caspar Wistar.

Zachary, the Bonds, and young Thomas Cadwalader were among the earliest Pennsylvanians who, upon finishing their apprenticeships, went to Britain or the continent to complete their training.

Upon their return, men of their class naturally stepped into high positions within the medical world of Pennsylvania which they shared with home-grown physicians like William Shippen, Sr., who started practice as an apothecary in the English tradition. That is, he took care of the sick, performed simple surgery and sold drugs at his shop at "the Sign of Paracelsus' Head." As his skill grew he simply elevated himself to the physician's rank.

It wasn't until the late 18th Century, however, that even trained physicians gave up selling drugs. Early doctors who tried to break away from the practice—Adam Thompson and John Morgan especially—encountered great resistance.

Helping advance medical professionalism were patrons-of-all-the-arts like William Allen who, though best remembered for his patronage of

The focus on medical progress became institutional with Pennsylvania Hospital

painter Benjamin West, similarly helped finance medical education abroad for promising medical students including John Morgan, Ralph Assheton, and John Redman.

Allen's protégés, as well as other medical students, almost invariably carried with them to London letters of introduction to Benjamin Franklin, Pennsylvania's representative in Great Britain, and/or Dr. John Fothergill, the Quaker physician who sponsored so many young Americans.

Franklin was free with his money in helping future physicians. But, for medical advice, he usually referred young men to Fothergill who recommended a winter be spent attending private lectures in London (preferably those of anatomist John Hunter) and walking the wards at St. Thomas' Hospital. As a capstone, Fothergill felt that every student should go to Edinburgh to study under the incomparable William Cullen or the renowned Alexander Monro *secundus*. This curriculum proved to be the general pattern for a proper medical education, but some varied the prescription. John Morgan added a winter in Paris studying with anatomist Jean-Joseph Sue and Adam Kuhn learned botany from Linnaeus at Upsala.

Benjamin Franklin, the protector of American medical students abroad, helped a whole generation and was an honorary member of several medical societies. In later years, a French engraver mistakingly, if not unreasonably, identified him as "*Docteur en médecine*."

Franklin's invention of bifocals is well known, but he also developed other medical apparatus, notably a catheter for his brother's use. He was an early supporter of small pox inoculation and James Logan and others called on the American wonder to cure them of paralysis, deafness and insanity with his electrostatic machines.

Franklin, additionally, was the principal lay founder of the Pennsylvania Hospital, America's first hospital in the modern meaning of the word. Its establishment, perhaps more than any

other factor, laid the groundwork for the distinction that Pennsylvania medicine was to achieve. Until its conception in 1751, medical progress had to depend on the individual. The medical community lacked an institutional focus.

Pennsylvania Hospital became the center of teaching and practice of medicine in the colony—a place where patients could be adequately cared for and where apprentices could be taken for study. It was at here, appropriately, that America's first clinical lectures in medicine were given by one of its important professional founders, Dr. Thomas Bond.

New Englander John Adams found little in Philadelphia to his liking. Boston, he believed, was morally, religiously and educationally superior to it. But he had to admire the Quaker city's charitable institutions and especially its great hospital.

The humanitarianism which led to the hospital's establishment can be traced to the Quakers who are widely known for their concern for human suffering and their leadership in founding pioneer American institutions devoted to the care and treatment of the old, the sick and the insane.

In 1702, Philadelphia Quaker John Martin willed his property to provide a home for indigent Friends, and seven years later the first insane detention home in America was brought into being by the Quakers. After its founding, the Pennsylvania Hospital expanded the functions of this institution and attempted to help as well as control the mentally ill.

Additionally, the Quakers provided the Pennsylvania Assembly with the impetus to build the Pennsylvania Alms House (1731-1732) which, from the start, had to supply some simple medical care for its inmates. A century later the poor house added "and Hospital" to its name and, in 1920, the hospital portion of the hybrid separated, forming Philadelphia General Hospital.

What set the Pennsylvania Hospital apart from the Alms House was that it provided care for private patients

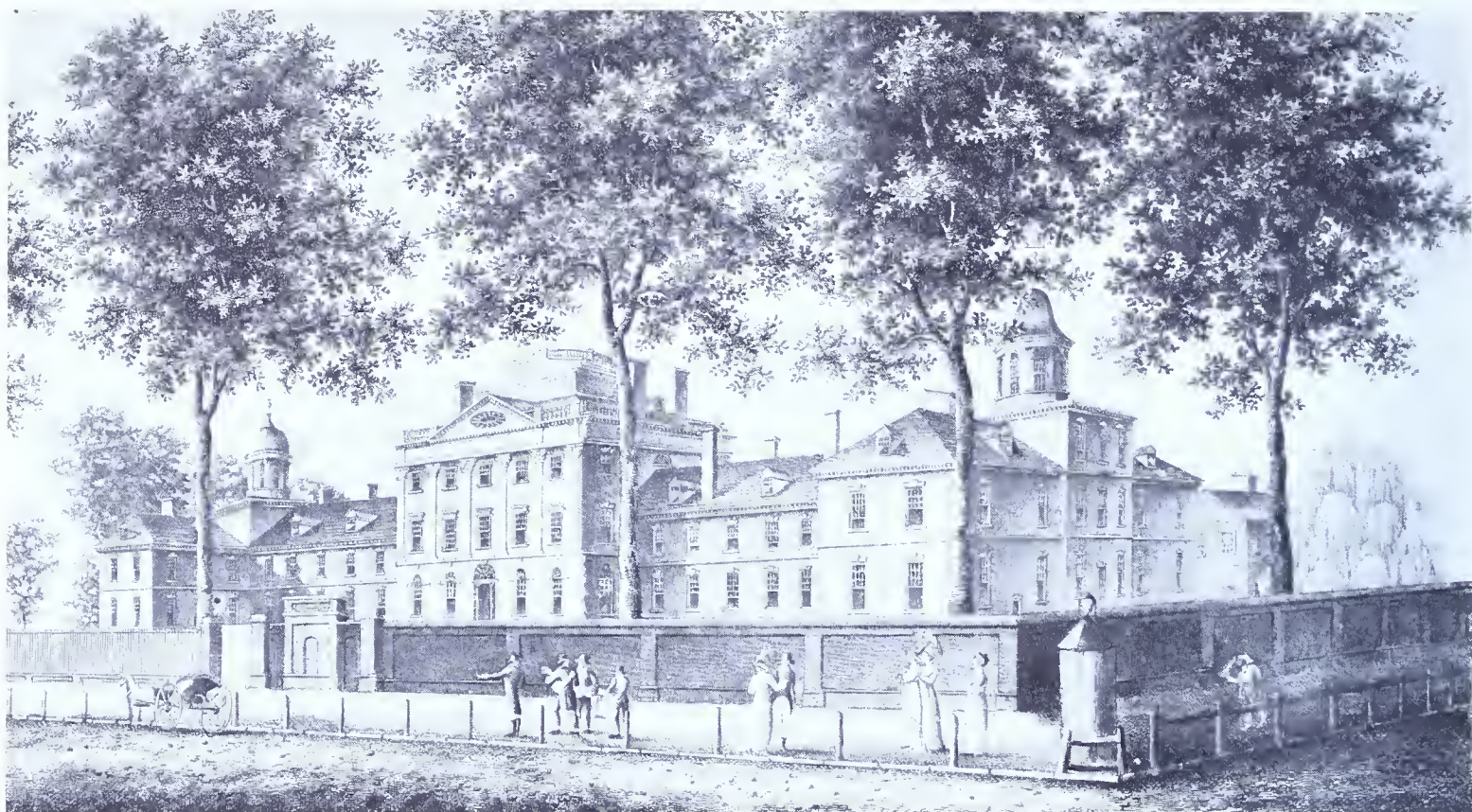


William Allen

Patrons of the arts

Dr. John Fothergill





South view of the Pennsylvania Hospital, Philadelphia.

Firsts in American medical history

Pennsylvania Hospital for the Insane, Philadelphia.



Morgan appointed America's first Professor of Medicine

as well as the indigent, and that it was molded on English and Scottish precedents. Quite consciously, Samuel Rhoads, who designed its first building, apparently referred to the Royal Infirmary at Edinburgh as the departure point for the highly original structure that eventually was to house America's first surgical amphitheatre.

Soon after its inauguration, the Pennsylvania Hospital attained international renown. Between 1751 and 1773 it cared for an average of four hundred patients annually, with a mortality rate of about 10 percent—probably one half the rate then prevailing in European institutions. In 1762 the Hospital established another milestone with the creation of America's first medical library. The College of Physicians of Philadelphia founded the second one in 1788.

To complement the hospital's services, the medical profession, at the urging of Episcopal Bishop William White, initiated the Philadelphia Dispensary in 1780—a pioneer outpatient facility staffed by younger physicians which provided free medical care and medicine to the indigent ambulatory sick.

Because so many influential physicians had studied medicine in Edinburgh, America's first Medical school originally was allied to the arts faculty at the College of Philadelphia rather than to the Pennsylvania Hospital as in the London tradition. A proposal calling for a medical school was made by Dr. Cadwallader Colden as early as 1717, but the date was forty-eight years premature. When a medical school was at long last created, it came as the result of the rivalry of two physicians, William Shippen, Jr., and John Morgan, and the superior craft and application of the latter.

William Shippen's father meant his son for medical leadership and had him trained accordingly. The younger man began giving private medical lectures in Philadelphia in 1762, and received from Fothergill encouragement in his plan to found a medical school. The English physician entrusted Shippen with a gift destined for the Pennsylvania Hospital—a set of eighteen magnificent anatomical drawings by Jan Van Rymsdyck (Wil-

liam Hunter's illustrator), a skeleton, and plaster casts of the gravid uterus, all to be used in medical teaching.

While Shippen was conducting his course employing the Fothergill paraphernalia, John Morgan was completing his medical education in Europe and garnering medical honors which, by shrewd press agency, he made sure were known at home. With his studies complete, Morgan returned to Philadelphia with a letter from the Proprietary, Thomas Penn, to the Trustees of the College of Philadelphia endorsing the young physician's plan for a medical school and the manuscript of his own brilliant "Discourse upon the Institution of Medical Studies in America."

Before Shippen was aware of what had happened, Morgan was appointed America's first professor of medicine, and what was to become the medical school of the University of Pennsylvania was launched. Even though Shippen was given the school's chair of Anatomy and Surgery, he felt cheated of his primacy and a disgusting feud developed between the two which was to last over thirty years, dishonoring both of their records of service during the Revolution, and almost wrecking their school.

In 1768 Adam Kuhn was added to the school's faculty in materia medica and the next year Benjamin Rush became professor of chemistry. Supplementing their efforts were Provost William Smith's lectures in natural philosophy and Thomas Bond's clinical lectures at the Pennsylvania Hospital.

Morgan established high standards for medical education and insisted on pre-medical training. At least one year was to be required for receiving the M.D. and three additional years were needed before a student could defend his thesis for the M.D. But, from the graduation of its first class of ten in 1768 until the abolition of the M.B. in 1789 (coincidentally the same year that pre-medical requirements were dropped), the College of Philadelphia awarded few M.D.'s.

The alleged loyalist sympathies of members of the faculty of the College of Philadelphia invited the patriot-dominated State Legislature to found



Dr. John Morgan

Smallpox scourges Pennsylvania

the rival University of the State of Pennsylvania which established its own medical school. In 1791, when tempers cooled, the two schools merged and the modern University of Pennsylvania was formed. At the time of the Revolution, there were only two places in America where formal medical education was available—New York and Philadelphia.

Perhaps it was the stimulus of the medical school that finally induced physicians to organize a professional organization, for it wasn't until 1766

While its first president was John Redman, its early guiding force remained Rush, signer of the Declaration of Independence and the first American to achieve international recognition in the world of medicine. Pioneer in the humane treatment of the mentally ill and in his temperance views, he achieved his greatest fame or notoriety for his heroic treatment of yellow fever—calomel and bleeding. The dispute over his therapeutics led, in 1797, to a split in the College of Physicians and the found-

maintained in the area and was increasingly prominent in western affairs until his wife's death. He then married her lady's maid and retired from practice.

Harrisburg, the future capitol of Pennsylvania, did not have a trained physician until Dr. Martin Luther moved there from Virginia in 1785.

The Pittsburgh area was also to lag in obtaining hospital facilities. Although temporary military hospitals and cholera hospitals were opened as needed, it wasn't until 1847 that Mercy Hospital was founded by Bishop Michael O'Connor. Non-sectarian West Penn Hospital and German-Protestant Passavant Hospital followed in short order.

Matthias Greuther's copper engraving of a doctor healing fantasy by heat treatment, ca. 1600.



The Bettmann Archive

that the Philadelphia Medical Society was founded. Reorganized in 1787, it was absorbed by the College of Physicians fifty years later. The present Philadelphia County Medical Society dates from 1849.

The College of Physicians of Philadelphia was the earliest American medical academy. It tried to obtain the authority to license all of Pennsylvania's physicians, but the authorizing legislation died in the Assembly. The College's prime mover, Benjamin Rush, meant it to consist of physicians by the educated London standard and, accordingly, our pioneer surgeons including Philip Syng Physick, John Syng Dorsey, and William Gibson, were not invited to membership.

ing by Rush of the short-lived Academy of Medicine.

Medicine developed slowly outside the area of earliest settlement, but as the concentration of medical personnel grew in other parts of the State, medical organizations appeared. The Warren County Medical Society, the first medical society founded outside of Philadelphia, dates from 1821.

Pittsburgh's earliest doctors, like Scottish-educated Hugh Mercer, arrived there on military assignment and left when their tours of duty ended. The first physician to settle permanently in Pittsburgh for the sole purpose of the practice of medicine was Dr. Nathaniel Bedford who arrived as a military man. But, after resigning from the army in 1770, he re-

Medical education took the longest time of all to become established and even though the first proposal for a medical school was made in 1846 it wasn't until forty years later that the ancestor of the medical school of the University of Pittsburgh was functioning.

East or West, Pennsylvania's health problems remained constant from the 17th through the 19th centuries. Smallpox was an especial scourge. Coming along on the *Welcome* with William Penn, it killed about thirty passengers enroute. The disease apparently also helped the colonists; smallpox introduced by the Swedes or Dutch apparently killed off large numbers of the colony's Indians. This perhaps even more than Penn's cele-

brated regard for Indian rights, may explain the harmonious relations of white and red men in early Pennsylvania.

Even though vaccination was known from the eighteenth century, smallpox was a major killer in Pennsylvania until as late as 1861, and not until 1895 did all Pennsylvania school children have to be vaccinated. In addition to smallpox, Pennsylvanians appear to have been plagued by the common cold, the children's diseases (chickenpox, measles and mumps), and huge numbers of other infectious and communicable diseases including scarlet fever, malaria, diphtheria, typhoid, typhus, dysentery, influenza, yellow fever, tuberculosis

The most feared medical problem in early Pennsylvania was the epidemics which harrassed the colony from its very beginning. The most dramatic bout was the yellow fever epidemic of 1793 which killed about 10 percent of Philadelphia's population. Among the runners-up for inspiring terror were the nationwide Asiatic cholera epidemics of 1832, 1849, and 1866.

The timespan between the great yellow fever epidemic and the last Asiatic cholera siege mark the growth of scientific medical knowledge. At the beginning of the period, as for centuries before, epidemics were looked upon as divinely wrought devices. Doctors, like Rush, struggled

City's advanced water supply sometimes backfired. For years it helped spread innumerable waves of typhoid over the city as whole reservoirs, instead of individual wells, became infected.

Up through the 19th century, only a small percentage of Pennsylvanians was treated by academically trained physicians. Most doctors had served apprenticeships or perhaps had a year of lectures picked up somewhere. Self doctoring was common and Pennsylvania, honored for its many medical firsts, also produced the earliest American patent medicine, *Tuscarora Rice*, developed by Mrs. Sybilla Masters.

Outright quacks also thrived here. Transvestite Charlotte Hamilton (posing as Charles Hamilton) ministered to 18th century residents of Chester County. Charlatan Francis Torres bilked Philadelphians into purchasing "Chinese Stones" guaranteed to cure toothache, cancer, and the bites of mad dogs and rattlesnakes. Even more remarkably, the managers of the Philadelphia Alms House obtained the local distribution rights of Elisha Perkins' "Metallic Tractors," a device for curing all manner of disease. Furthermore, the board sold the contraption to the Chief Justice of the United States Supreme Court and, according to legend, even to George Washington.

In the 1820's when the lines between quackery and organized medicine were not as distinct as they were to be later, the leading physicians of Philadelphia could be found endorsing patient medicines, most notoriously "Swaim's Panacea"—a concoction of sassailla syrup, oil of wintergreen, and corrosive sublimate.

Medical research lagged in the 17th and 18th centuries and most medical education tended to be theoretical with little attention given to anatomy demonstrations even though the first such lectures in America were presented by Thomas Cadwalader in the 1730's. What generally passed for medical research was random observations and historical scanning. The results of this type of inquiry is evident in Cadwalader's pioneer treatise *An Essay on the West India Dry Gripes* (1745) and in the first American textbook, John Jone's *Plain, Concise, Practical Remarks on the Treatment of Wounds and Fractures* (1775).

As exceptions to the contemporary lacks in medical research stand the work of Adam Seybert who performed actual experiments on the "putrefaction of the blood" in 1793 and the



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Bloodletting from medieval treatise, 1519.

and even syphilis and gonorrhea. Well into the 19th century, a man wasn't considered a man in rural Pennsylvania unless he had the "chills," and it was only with the large scale clearing of the land and use of pesticides that malaria became rare. Malignant and degenerative diseases usually being internal were not generally recognized and there were few old people around to suffer from many complaints familiar to geriatricians.

Threats to health were everywhere—especially in the diet which overly concentrated on meat and alcohol. It was the state of the American diet, rather than an outraged morality, which induced Benjamin Rush to have the College of Physicians petition Congress in 1790 to control the sale of distilled liquor.

against epidemics, and a board of health was founded in Philadelphia to help clean up the city. But, the general attitude was overlaid by religiosity, and prayer was very widely relied upon. By 1866, epidemics were recognized as medical problems best coped with by proper sanitation and more rational treatment.

As a rule, sanitary measures like cleaning streets and draining stagnant pools were only feverishly put into effect after an epidemic had broken out. It wasn't until 1872, for example, that garbage was collected in Philadelphia. Pennsylvania did take an important health step with the introduction of public water systems. The Moravians at Bethlehem installed one about 1755 and Philadelphia's first went into use in 1800. The Quaker

Students label Rush



Dr. Benjamin Rush was the first American to achieve international recognition in the world of medicine.

work Rush's student, John R. Young did in 1803 to demonstrate the acid nature of gastric digestion which pointed the direction Beaumont was to follow. It wasn't until the influence of the Paris Clinicians was felt in the 1820's that medical research, in the modern sense, became increasingly common in America.

After the Revolution, while the United States was attempting to develop a national identity, even medicine was drawn into the effort. For example, the originally stated scientific

aim of the College of Physicians was to encourage the study of American diseases and drugs and many a physician "took pride in the thought that even diseases were made in America."

Ironically, however, the only medical risk peculiar to the new country, aside from a few native diseases, was the heroic practice Americans were accorded. Calling for huge doses of laxatives and massive bleedings, the theory was based on Scottish principles—only carried to extremes unknown abroad. In a lighter thera-

peutic vein, the interest in American cures stimulated the interest in our medicinal springs and this era marks the important development of Pennsylvania's Bedford and Chester Springs as counterparts to the English "watering places."

A new nationalism and a growing professional importance demanded the emergence of American medical journals. Of the thirteen publications founded in the United States before 1820, five [beginning with the *Philadelphia Medical Museum* (1804-

the "American Medical Philosopher"



Parke-Davis

1811) edited by John Redman Coxe] were produced in Pennsylvania. The *Philadelphia Journal of the Medical and Physical Sciences* succeeds the *New England Journal of Medicine and Surgery* (founded 1812) as the second oldest of its kind in the nation. It was founded by Nathaniel Chapman in 1820 and renamed the *American Journal of the Medical Sciences* by Dr. Isaac Hays who edited it until 1879 when stewardship passed to his son, I. Minis Hays.

Medical journalism had a hard time

maintaining its respectability during the second half of the 19th century as increasing pots of red ink led publications to accept the most dubious patent medicine advertisements. The struggle, obvious even in the *Journal of the American Medical Association*, was also evident within the Commonwealth.

Soon after the formation of the Medical Society of the State of Pennsylvania in 1848, the organization began publication of its transactions. In 1896 the group produced a journal which, for nearly twenty-five years, conducted as a society-related proprietary fiefdom, run first by Dr. Adolph Koenig of Pittsburgh and then Dr. Cyrus Lee of Athens. Not until 1920, when the State Society acquired its first Executive Secretary, did the Society assume ownership of the *Pennsylvania Medical Journal*, the ancestor of the present PENNSYLVANIA MEDICINE.

During the early years of the new American Republic, Philadelphia remained the pre-eminent center of American medical education and influence and Benjamin Rush, the teacher, was the living personification of its primacy. In each of the four years before his death in 1813, about three hundred students enrolled in his courses. Of the approximately twenty members of the South Carolina Medical Society in this period, about half had been Rush's students, and most medical students did not consider their education complete without a course of lectures by "The American Medical Philosopher."

Recognition of Philadelphia's competence also came from abroad. Daniel Coxe sent his son, John Redman Coxe, here from Britain to be educated (1791) and S. W. Jacobs of Belgium received his M.D. in 1801. But, more frequently, Americans like Philip Syng Physick returned from advanced study in Europe to lead in the development of a sphere of medical practice. Often called the "Father of American Surgery," and the first man in America to hold a separate chair of surgery, he invented ingenious instruments to perform lithotomies and tonsillectomies and introduced the use of buckskin sutures. Inventiveness seemed to best characterize our medical contributions during this era. Joseph Parrish devised an aneurysm

needle, Joseph Hartshorne an apparatus for a fractured patella, and Charles Delucena Meigs a widely used ring pessary.

With the advent of the 1930's, increasing surgical skill and the fruits of significant medical research joined gadgetry as the hallmarks of medical practice. German-trained Samuel Jackson decried "the commercialism of the age" and urged his students "to attempt research in their first lean years, ere the shades of money-making closed about them."

A student of the clinician Pierre Charles Alexandre Louis, William Wood Gerhard—applying French scientific methods—differentiated between typhus and typhoid in the 1830's. Brilliant theorist Joseph Leidy, who almost advanced the theory of evolution in 1846 prior to Darwin, discovered the trichina cyst in the muscles of pigs. To codify the emerging medical knowledge, Robley Dunglison brought out the first of numerous editions of his pioneering *New Dictionary of Medical Science and Literature* in 1833.

One of the greatest contributions to medicine during the first fifty years of the 1800's—the development of anesthesia—also has its Pennsylvania connection. Crawford W. Long of Georgia who, in March, 1842, first performed surgery using ether, was a proud alumnus of the University of Pennsylvania.

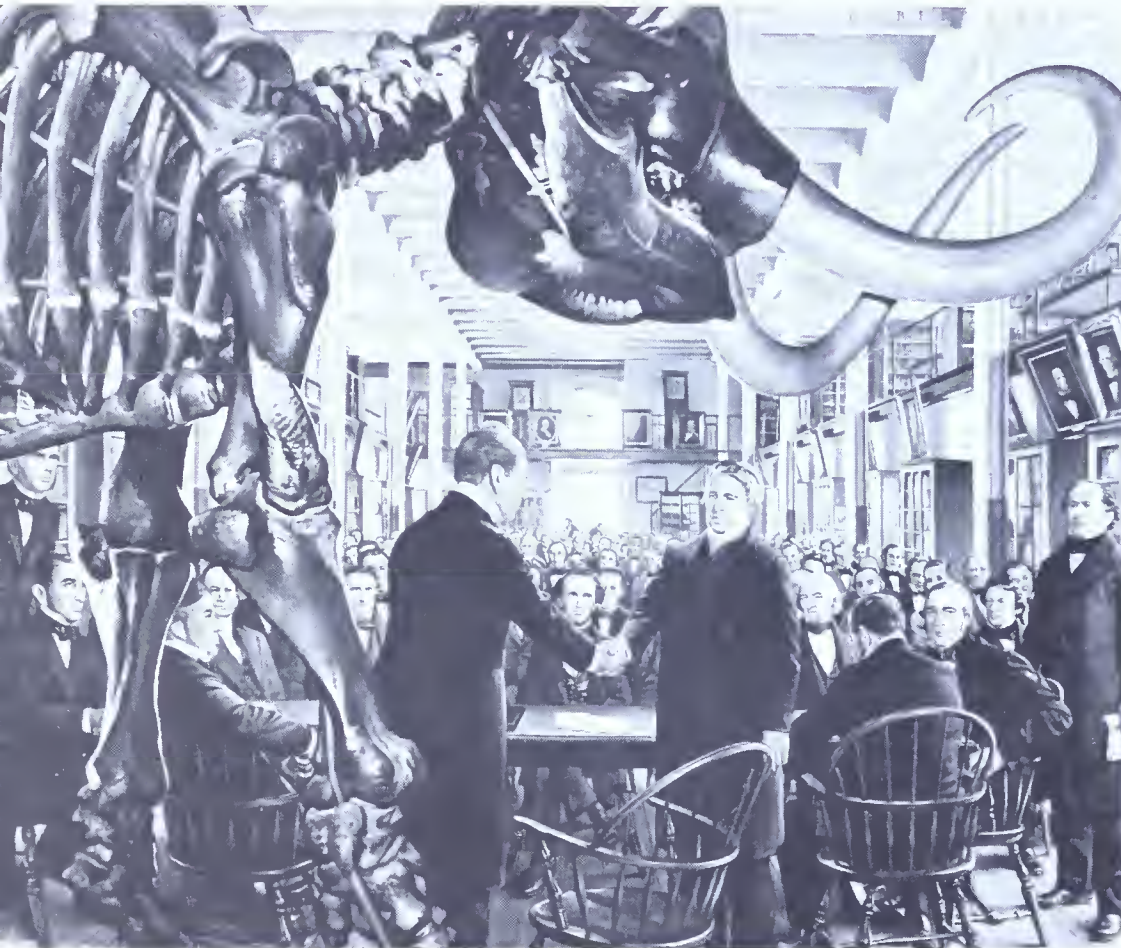
Every generation of Pennsylvania's physician crop seems to have produced a few men who attained fame or notoriety in other than medical pursuits and this vital time produced its share. George Logan's diplomatic mission as a private citizen to France in 1798 led Congress to pass the "Logan Act" forbidding future non-official negotiations. Elisha Kent Kane's *Arctic Exploration: The Second Grinnell Expedition in Search of Sir John Franklin* (1856) has been called "the greatest book on arctic exploration ever written."

The font of all regularly trained physicians has remained medical schools and, up until the 1820's, there was only one in Pennsylvania—the University of Pennsylvania. But, many people were still trained by the apprenticeship system. As a supplement to the education of both appren-

*American Medical Association is
organized at Philadelphia's
Academy of Natural Science, 1847*



Nathaniel Chapman, 1847



Parke-Davis

*Nathaniel Chapman is first of
twelve Pennsylvanians to
head the 121-year old AMA*



John Atlee, 1883



George de Schweinitz, 1922



George Wood, 1855



Samuel Gross, 1868



Alfred Stille, 1871



William Keen, 1900



John Musser, 1904



William Rodman, 1915



Edward Bortz, 1947-48



Elmer Hess, 1955-56



James Appel, 1965-66



Pennsylvania Historical and Museum Commission

A dissection at Woman's Medical College, 1903.

tices and medical students, informal institutions like the Medical Institutes of Philadelphia (1817) and the Philadelphia School of Anatomy (1820) were created.

As the Commonwealth grew, however, the demand for regular medical training outstripped the capabilities of its single college of medicine. In 1825, with the founding of Jefferson Medical College, the University of Pennsylvania's monopoly was broken. The new school was bitterly fought by the faculty of the older one whose income was directly dependent on student enrollment. Penn even sent lobbyists to Harrisburg to prevent Jefferson Medical College from receiving its charter. In fact, it was because of the opposition of the University-centered medical establishment that the founders of Pennsylvania's second medical school allied themselves with Jefferson College of Canonsburg rather than attempt to attain a separate corporate existence, even though they meant to operate in Philadelphia.

Once the monopoly was broken, other medical schools followed with less pain aborning. Pennsylvania Medical College began classes in 1839 under the aegis of Pennsylvania (now Gettysburg) College. Its unique charter of the next year held "That hereafter it shall not be lawful for any college incorporated by the laws of this State, to establish any faculty for the purpose of conferring degrees, either in medicine or the arts, in any city or county of the commonwealth [sic], other than that in which said college is or may be located." The institution's prolonged death throes were ended at a sheriff's sale in 1861, a fate matched by most of the scores

of medical schools of all varieties that the Legislature chartered from the 1840's to the 1880's. Of this whole rash, only three—the University of Pittsburgh Medical School, Woman's Medical College, and Hahnemann Medical College—survive.

Originally called "Female Medical College of Pennsylvania" at its founding in 1850, Woman's is the only surviving school of its genre in America. Originally established and staffed by men, it elected the first American woman professor of medicine, Amy Preston.

Hahnemann's story is also unusual, in that it is rooted in homeopathy. The American followers of homeopathy organized their first school, the short lived North American Academy of Homeopathic Medicine, in Allentown in 1836. Then, in 1848, the State Legislature chartered the Homeopathic Medical College of Pennsylvania in Philadelphia which, in 1867, became Hahnemann Medical College of Philadelphia. In 1936, the school formally renounced the sectarianism of homeopathy.

Pennsylvania's role has also been distinctive in the paramedical fields. The Philadelphia College of Pharmacy and Science, another first, was founded in 1821 after many years of medical concern over the quality of available drugs. The Nurse Society organized by Joseph Warrington, M.D., in the 1830's, attempted to train nurses and elevate the profession. The School of Nursing, founded in 1861 by Woman's Hospital of Philadelphia, graduated the first American-trained nurse. Pennsylvania lagged in establishing dental education and its first school, the Philadelphia College of

Dental Surgery, was not founded until 1850, years after the Baltimore College of Dental Surgery. In the area of veterinary medicine, although interest can be traced to Rush and even earlier, the initial school, at the University of Pennsylvania, was not established until 1884.

Pennsylvania's importance to American medicine in mid-century was clearly demonstrated by the fact that the American Medical Association was organized at the Academy of Natural Science in 1847 and that its first president, Dr. Nathaniel Chapman, was considered to be the "unquestioned head of the medical profession of Philadelphia" and the holder of the most prestigious teaching position in the nation—the chair of the theory and practice of medicine at the University of Pennsylvania. Eleven of his successors at the head of medicine's most influential voice have been Pennsylvanians, including the great surgeon Samuel Gross, ophthalmologist George E. de Schweinitz and, most recently, James Z. Appel of Lancaster (1965).

It was the impetus of the formation of the A.M.A. which finally prodded Pennsylvania into organizing its first state medical association—the Medical Society of the State of Pennsylvania (1848) with Lancaster's Samuel Hulme as its first executive. Pennsylvania was the sixteenth state to form this type of organization; New Jersey was the first. Perhaps it was the medical organization of its dominant city that delayed for so many years the creation of a state wide association in Pennsylvania.

As the Commonwealth matured, increasing sophistication of care in many

areas of medical treatment and the consciousness of religious and ethnic groups led to the foundation of large numbers of hospitals.

In 1825 the estate of wealthy grocer James Wills provided for the establishment of one of the nation's foremost ophthalmic centers, Wills Eye Hospital, and another bequest provided the Preston Retreat, a lying-in hospital housed in a noted Greek revival building designed by Thomas U. Walter.

Pennsylvania Hospital constructed the Pennsylvania Hospital for the Insane in 1833 and Children's Hospital of Philadelphia opened its doors in 1855. Children's Homeopathic Hospital of Philadelphia was chartered in 1877. Religious groups joined the procession: Roman Catholic St. Joseph's Hospital of Philadelphia (1849), that city's Episcopal Hospital (1852) and Jewish Hospital—now Einstein Medical Center (1874). The German Hospital (now Lankenau), established in 1860, had strong Lutheran connections but from the start it was open to all without distinction of race, color or creed.

With the coming of the Civil War, Philadelphia became, next to the District of Columbia, the North's greatest hospital center. Of the fifteen temporary hospitals established in the city, the largest were the 4,000-bed Mower General Hospital and the even larger Satterlee General Hospital.

Construction of the first University-owned and controlled hospital, the University of Pennsylvania Hospital, began in 1872 after a prolonged effort led by William Pepper, Jr. The next year, our State Capitol built Harrisburg Hospital.

Pennsylvania's greatest decades for hospital growth were the 1870's, 80's and 90's. During these years, hospital service, for the first time, became widely available across the Commonwealth. The tragedy of the Johnstown Flood led directly to the Conemaugh Valley Memorial Hospital which was an extension of the emergency Red Cross hospitals hastily organized after the disaster.

As a rare expression of concern among the rich who controlled our natural resources, Mr. Adrian Islin of New York City, a principle owner of the Rochester and Pittsburgh Coal Company, instigated the foundation of Adrian Hospital in Delancey. Initially to care for sick and injured employees, it later served the entire community. Railroad money, in the

hands of heirs, founded the world renowned Robert Packer Hospital in Sayre in 1885, and the belief of the efficacy of fresh air as a curative led to the establishment of Kane Summit Hospital in 1894. St. John's General Hospital in Allegheny City was a spin off of Philadelphia's German Hospital and, like the original, it was founded under Lutheran influence.

What effected the course of medical development in the second half of the nineteenth century was not so much institutions as the Civil War. Wars are locomotives of change and the Civil War was paramount in its results. While the Revolution had provided an abundance of stories of bravery and created medical heroes like Berks County's Dr. Bodo Otto, the Civil War stimulated medical theory to branch out in new directions and the inspiration of innumerable important works came from the war-time experiences of physicians.

In 1859, more than half of Philadelphia's 1,200 medical students were from the South, and as tension developed into hostility and hostility into war they left Philadelphia. But, it is no surprise that the chiefs of both the northern and southern medical services had been trained in Pennsylvania. Northern students went right into the army. Older physicians and teachers joined the army as regimental surgeons or gave their services as contract surgeons—working several hours a day in military hospitals and also carrying on private practice. Dr. Samuel D. Gross prepared a manual of



Lancaster's Samuel Hulme became the first executive of the newly formed Medical Society of the State of Pennsylvania in 1848.

Dr. Charles Leonard "skiagrapher" (today's clinical radiologist), operates an early X-ray machine (about 1897) at the Hospital of the University of Pennsylvania.

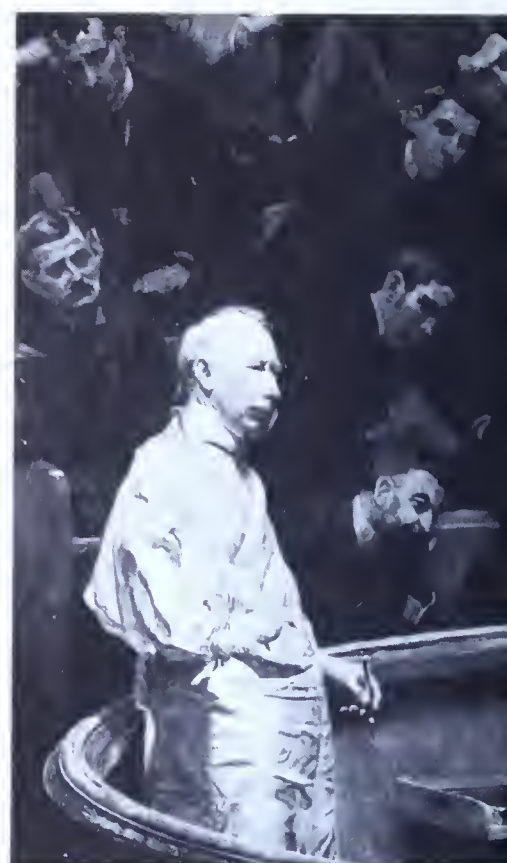
University of Pennsylvania





The Gross Clinic

Jefferson Medical College



The Agnew Clinic

Pennsylvania Physician Spectacular

19th Century Physicians Withdraw From Public Affairs

military surgery and hygiene which both armies used and which was even reprinted in Richmond.

Before the war there were the beginnings of a trend towards a nationwide public health movement. Led by Dr. Wilson Jewell of Philadelphia, the first National Sanitary Congress met in Philadelphia on May 13, 1857, to discuss matters of sanitation and quarantine. The conventions were continued over the next three years when military health problems took priority over civilian matters, and medical and lay concern was directed towards the War.

Less than two weeks after Fort Sumter was fired upon, the Philadelphia Nurses Corps—America's first—was founded and, through the soon-to-be-formed United States Sanitary Commission, other laymen helped to stir needed reform in the Army medical services and to give special help and comfort to the sick and wounded. To promote the national agency's

work, the Sanitary Commission of Pennsylvania, New Jersey, Maryland, and Delaware gave a great fair during three weeks in June 1864. Thousands, including President and Mrs. Lincoln, attended the function, patronized its booths, and helped net over a million dollars to help the Union Army's sick and wounded.

Despite the sanitary fairs, the fact remained that disease killed more soldiers than wounds, and that doctors knew little about hygiene and sanitation. They learned many lessons by the war's end and, afterwards, academic attention was devoted to the neglected area. In the early 1870's, a chair of hygiene was established at the University of Pennsylvania and, in subsequent years, laboratories were added.

Running neck and neck with disease as a cause of death was inept therapy. William S. Forbes saw that many surgeons were guilty of butchery because they had no knowledge of

anatomy and he vowed to rectify the situation by helping to make cadavers available for medical teaching. He led the fight for the Anatomy Act of 1867 which partially realized the goal. John Hill Brinton, an author of *The Medical and Surgical History of the War of the Rebellion*, was an important chronicler of medicine's role in the war.

Great physicians, including W. W. Keen, George R. Morehouse, and S. Weir Mitchell learned from the War. As a result of his observations at Turner's Lane hospital, S. Weir Mitchell published *Reflex Paralysis and Gunshot Wounds and other Injuries of the Nerves*, described as one of the "great milestones in the history of American neurology and American clinical medicine." Through Mitchell's efforts, America's first department of neurology was founded at the University of Pennsylvania in 1871. Mitchell was to make many more contributions to neurology and psy-



University of Pennsylvania



The Babcock Clinic

Leader in Surgical Specialization

Specialization Replaces the Generalist, Societies Yield

chology as well as to become one of his era's most popular novelists. Additionally, Mitchell's medical interests reflected a trend.

Before the Civil War most physicians, with a few exceptions like surgeon Philip Syng Physick, practised general medicine. By 1900 increased knowledge, and a greater population had made specialization commonplace. Modern specialties emerged, led by physicians like ophthalmologist William Thomson and radiologist Charles Lester Leonard. America's pioneer skiagrapher, Leonard made his first medical X-rays just two months after Roentgen announced his discovery. When he retired from practice in 1903 Leonard already bore the badge of early workers in radiology—fatal X-ray burns.

Medical diagnosis based on more scientific knowledge was raised to greater heights by such dedicated practitioners as Jacob Mendez Da Costa who never stopped his clinical observations. Watching his own symp-

toms during his last, fatal heart attack, he remarked "Just as I expected."

Two paintings, "The Gross Clinic" (1875) and "The Agnew Clinic" (1898), both by Thomas Eakins, document the dramatic change surgery underwent in a few years. In the 1875 painting, the surgeon and his assistant are in street clothes. In 1898, they are in aseptic surgical white. The two stars of the paintings were great surgeons, a field in which Pennsylvania physicians have been most spectacular as leaders.

Easton-born Samuel D. Gross's *Elements of Pathological Anatomy* represents the first effort ever made to present that subject in a systematic, carefully constructed form. Gross, an editor of *Lives of Eminent American Physicians and Surgeons of the Nineteenth Century*, was an early appreciator of America's medical heritage and also a symbol of the nineteenth century physician's withdrawal from public affairs as specialization replaced the generalist. Benjamin Rush signed

the Declaration of Independence. A century later, Gross was proud of the fact that he, himself, seldom voted.

David Hayes Agnew, surgeon and teacher of anatomy, authored the *Treatise on the Principles and Practice of Anatomy*, one of the most widely used text books of the nineteenth century. Agnew's contemporary, William Williams Keen, in 1887 performed the first successful operation for a brain tumor.

As specialties developed, research-oriented physicians felt the state medical society and the College of Physicians to be too general. Beginning with the Pathological Society founded by Samuel Gross in 1859, new organizations were founded which reflected the ever more specialized discipline of medicine.

Perhaps the greatest researcher of the last century to work in Pennsylvania was William Osler who spent four years (1884-1888) at Blockley (now Philadelphia General Hospital). While there for only a short time, he



Perhaps the greatest researcher of the last century to work in Pennsylvania was William Osler who spent four years (1884-88) at Blockley (now Philadelphia General Hospital).

did exceptional work on the mechanism of malaria and established the need for blood examinations for determination of the disease. He also wrote his important *The Cerebral Palsies of Children*.

Research helped strip away the romantic, Victorian nonsense that surrounded many diseases and to expose them to eyes of science. Tuberculosis, for example, was no longer to bestow a "languor in the azure eyes . . . which told of something too refined for humanity." It was to be looked upon as a disease which destroyed the lungs. To fight it, Dr. Lawrence Flick in 1892 founded the Pennsylvania Society for the Prevention of Tuberculosis. It was the first statewide organization pitting medical and lay men against a single disease and was the inspiration for the foundation of the American Tuberculosis Association.

Despite the great medical advances made by Pennsylvanians, the Com-

monwealth gave very little official aid or encouragement to its medical profession. Not until 1867 was the state's first Anatomy Act, the Armstrong Law, passed to provide a legal source of bodies for dissection. Inadequate, it applied only to unclaimed bodies in Philadelphia and Allegheny Counties. Pennsylvania's satisfactory, albeit belated, Anatomy Act of 1883, came about as a result of a public scandal arising out of the fact that Jefferson Medical College had to use bodies supplied to it by "resurrectionists" (grave robbers) because a sufficient supply of legal cadavers was not available. The legislative leader of the battle for the new legislation was William James McKnight, a progressive physician turned politician from Jefferson County. He was the first doctor in his county to use a hypodermic syringe and to operate successfully for cataracts. In his youth, his quest after medical knowledge had led to his conviction as a grave robber.

Similarly, Pennsylvania lagged sorely in licensing physicians, and it was not until 1893 that the Commonwealth established a state examining board. The legislation providing for the licensing also attacked diploma mills by making a three year medical course mandatory and provided for a four year course, or a year of pre-medical training, by 1895. Why was Pennsylvania so slow in licensing its physicians? In part, it was due to the opposition of the untrained, and, to a greater degree, to a spirit of democracy taken to extremes. Somehow an established licensing board smelled of aristocracy and interfered with a man's freedom.

The 20th century has witnessed the launching of two important medical schools—over sixty years apart—and the disappearance of several others. At the close of the 1960's, there are seven active medical schools in the Commonwealth. Since the failure of Lincoln University's medical

Flexner expounds on Pennsylvania Medicine

school in 1876, no liberal arts institution or university had tried to establish a medical school until 1901 when the trustees of Temple College (Temple University) "ordered that an evening medical school be opened in connection with the other departments of Temple College."

Of great import to the development of medical education within the Commonwealth was the new basic medical sciences orientation being introduced into medical education by German-trained younger physicians and by graduates of the newly-founded Johns Hopkins Medical School, practitioners like Simon Flexner who for a brief time served as head of the Pathology laboratory at the University of Pennsylvania. But, research had not yet become significant at Philadelphia's medical schools and he left for the more pleasing atmosphere of New York's Rockefeller Institute.

Flexner's brother, Abraham, working under a grant from the Carnegie Foundation, published the epic *Medical Education in the United States and Canada* (1910) in which he rated the University of Pennsylvania's Medical School as very good, gave Jefferson a moderate rating, "complimented the

Woman's Medical College on a worthy effort with limited means" and denounced the city's remaining four schools as mediocre or worse. Flexner proposed that Pennsylvania should have only two medical schools, a strengthened one at the University of Pittsburgh and one composed of the strongest medical schools in Philadelphia merged with the University of Pennsylvania. Fortunately Philadelphia did not follow Flexner's prescription and most of the medical schools decided to "shape up, rather than ship out." Only one, the Medico Chirurgical College of Philadelphia, which opened in 1881, decided to give up its individual existence and to merge with the University of Pennsylvania in 1916.

The newest medical school in Pennsylvania, the Milton S. Hershey School of Medicine of the Pennsylvania State University, accepted its first class in 1967. Made possible by a grant of \$50,000,000 from the Milton S. Hershey Foundation and substantial federal funds, the development of the institution is being spearheaded by George Harrell, M.D. who is the only man in recent history to have organized the development of two medical schools from the ground up—

the first having been at the University of Florida. In a simpler day, Philadelphia-trained Charles Caldwell (1772-1853) helped to found five medical schools, beginning with Transylvania University.

Hershey Medical College has introduced a number of innovations. In an age of increased specialization, it is attempting to produce an up-dated variety of general practitioners. To aid in the understanding by the physician of the interaction of man, society, and his ills, Hershey is the first medical school to have a group of social scientists on its staff. It is also a pioneer in that its experimental Animal Research Farm provides the only such planned facility physically connected to a medical school.

Also within the sphere of medical education, the 20th century witnessed the development of osteopathic education from its beginnings in 1895 to the founding of the Philadelphia College of Osteopathy in 1953. Today, in keeping with contemporary trends, the College is constructing an entirely new physical plant. Similarly, the Pennsylvania State College of Optometry which, at its foundation in 1919 boasted of being the "only insti-

Body snatching in the 18th Century. (Pen and ink drawing by Barney Moore after a sketch by Cruikshank).



The Bettmann Archive



Dr. Jonas Salk

tution of its kind in the world not run for profit," received the right to grant Doctor of Optometry degrees in 1923. It is now a four-year professional school—the Pennsylvania College of Optometry.

This century has seen the greatest developments in the world of medicine of anytime in human history. Throughout the Commonwealth, as nationally, medical institutions are rebuilding. As alluded to above, medical schools are being rebuilt or added to, and our hospitals for the most part founded in the decades of the 1870's, 80's and 90's, are pulsing with new construction. Today, the State has some three hundred hospitals which include what are among the finest teaching hospitals in America.

New buildings are only the physical

manifestation of the knowledge explosion. As this century developed, medicine became ever more complex and specialized. Many innovations are of so complex a nature that they cannot be presented in this survey.

Surgical developments continued to be important. We have produced leading manufacturers of surgical instruments like Jacob H. Gemrig, as well as great surgeons. John Blair Deaver, M.D., a brilliant practitioner from Lancaster County, was one of that group which included the Mayos who moved surgery from the periphery of medical practice to its very center. Not an innovator, Deaver was a developer of procedures. He is most noted for having transformed the appendectomy into a routine procedure.

Working as a unique early team, neurologist William G. Spiller and neurological surgeon Charles H. Frazier created sophisticated neurosurgical techniques including the first "surgical transection of the spinothalamic tracts for the relief of pain in the body." Their contemporary, laryngologist Chevalier Jackson, developer of the bronchoscope, made such noted contributions to the field of laryngeal surgery that he was decorated by ten foreign countries.

Temple University's W. Wayne Babcock (1872-1963), a founding member of the American College of Surgery, developed the use of stainless steel sutures, spinal anesthesia and the theory of early ambulation after surgical procedures. Jefferson Medical College physician John H. Gibbon, Jr., is identified with one of the most important contemporary surgical procedures—open heart surgery. Gibbon is credited with having invented the heart-lung machine first successfully used in surgery May 6, 1953, when, for twenty-six minutes, it took over the vital heart and lung functions of an eight-year old girl from Wilkes-Barre, allowing Dr. Gibbon to operate directly on her heart. A modification of the heart-lung machine was vital to Christian Barnard's successful human heart transplants.

Pennsylvania has, since the late nineteenth century, been one of the most important producers of ethical drugs, and interplaying with this phenomenon has been the number of distinguished physiologically oriented researchers we have produced. Alfred Newton Richards who headed the department of pharmacology at Penn from 1910-1939 was one of America's foremost pharmacologists. A student of Oswald Schmiedeberg, the founder of modern pharmacology, Richards sought to bring his students the clearest possible understanding of how drugs work. Among his most significant work was his research on renal physiology undertaken in the 1920's. He is commemorated in the name of one of the most architecturally important contemporary buildings in America, Louis Kahn's Richardson Towers at the University of Pennsylvania.

Any list of important researchers should include George de Schweinitz, author of *Diseases of the Eye*, the long-time standard text in the field, whose most important original monograph *Toxic Amblyopias* was published in 1896. Brinton Chance, a contemporary physical biochemist at

Penn (and 1952 Olympic Yacht champion), discovered eight of the nine known active enzyme-substrate compounds.

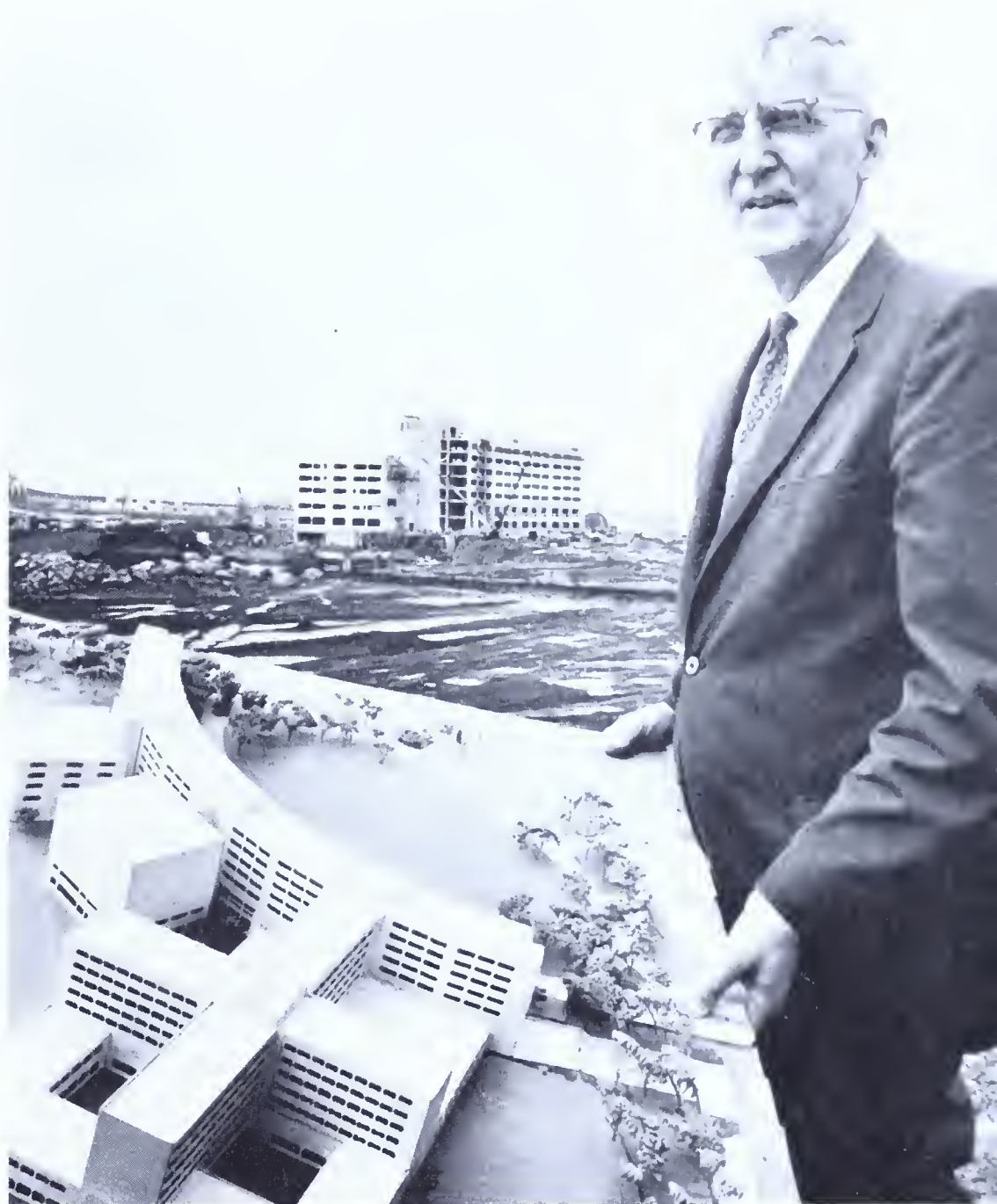
In immunology, contributions have been equally impressive. Pediatrician Joseph Stokes, Jr., discovered the value of gamma globulin for the prevention of epidemic and serum hepatitis. The most dramatic immunological breakthrough of mid-century must be credited to the University of Pittsburgh's Dr. Jonas Salk who headed the team which developed the polio vaccine.

In 1948, Salk and his colleagues confirmed the identity of three types of polio virus and went to work to develop a vaccine. By 1952, the vaccine, which along with the Sabin vaccine was to nearly eradicate polio, was ready for testing. The first large scale public immunization was among the children of Allegheny County with Dr. Salk's own children being first.

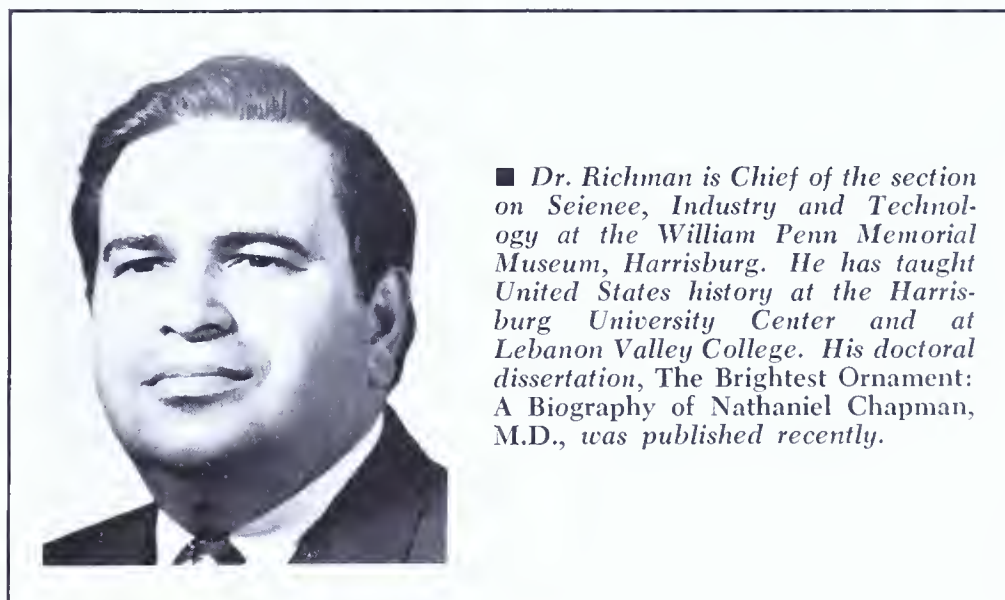
As technology decreases the earth's size, medical internationalism has emerged. A leader in this movement has been Henry L. Bockus, the founder and first chairman of the World Organization of Gastroenterology who, in 1960, became chairman of the board of directors of MEDICO (Medical International Cooperation), a service of CARE (which he served as a vice president).

As the Commonwealth heads towards the seventies, it does so rich with medical accomplishment. But the story is not an unblighted one. At a time when medical knowledge is at its highest stage in history, it is still possible for quacks to flourish. It gives shivers to realize that it took over thirty years of litigation before Pennsylvania, in 1960, could finally force the closing of the Hoxsey Cancer Clinic, and quackery is on the upbeat. Additionally, as medicine becomes more complex, it becomes increasingly expensive and city, county, state and federal governments are beginning to play an increasingly significant role in the financing of medical care. The full implications of medicare and Pennsycare are only just being realized. What's ahead in an uncertain world?

Prognostication is impossible. It can only be hoped that medicine will be able to cope with the new complexities and developments which some day might make our present health care technology look as simplistic as Benjamin Rush's prescription of calomel and bleeding.



The interaction of man, society and his ills—a new concept at Hershey Medical Center headed by Dr. George Harrell.



■ *Dr. Richman is Chief of the section on Science, Industry and Technology at the William Penn Memorial Museum, Harrisburg. He has taught United States history at the Harrisburg University Center and at Lebanon Valley College. His doctoral dissertation, The Brightest Ornament: A Biography of Nathaniel Chapman, M.D., was published recently.*

